CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.08/HJSR/CSR-06/075j/CEMENT/2016-17 Date: 27.06.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
*NAME OF THE WORK	:	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	:	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	25.06.2016
PERIOD OF TESTING	:	25.06.2016 to 27.06.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.50 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	190 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	465 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

AE-B

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/W.No.08/HJSR/CSR-06/075j/SAND-Gradation/2016-17 : 27.06.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. H.J. Sanjay Reddy,**
# 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.

*** Name of Work** : Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates

Sample Received on : 25.06.2016

Date of Testing : 27.06.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	92.54	90-100	90-100	90-100	95-100
2.36	73.61	60-95	75-100	85-100	95-100
1.18	46.15	30-70	55-90	75-100	90-100
600 Micron	21.30	15-34	35-59	60-79	80-100
300 Micron	10.77	5-20	8-30	12-40	15-50
150 Micron	4.19	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.08/HJSR/CSR-06/075j/AGG/GR/2016-17 : 27.06.2016

TEST REPORT ON COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: **Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
* Name of Work	: Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (40mm)
Sample Received on	: 25.06.2016
Date of Testing	: 27.06.2016

Total Wt. of Aggregates in gms= **7000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	96.53	95-100	85-100
20	35.26	30-70	0-20
10	15.59	10-35	0-5
4.75	2.11	0-5	-

AE-B

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/HJSR/STEEL/2016-17 27.06.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of the Work	:	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Date of Test	:	27.06.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	517	561	13.50	O.K	O.K

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/HJSR/STEEL/2016-17

27.06.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of the Work	:	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Date of Test	:	27.06.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	16	1.56	521	563	13.70	O.K	O.K

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T-2377

Job No.: CTCE/BBMP/W.No.08/HJSR/CSR-06/075j/CUBE/2016-17 03.08.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: **Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
* Name of the work	: Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
* Sample ID	: Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 03.08.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	06.07.2016	03.08.2016	8.125	476.3	21.17
2	06.07.2016	03.08.2016	8.234	485.9	21.60
3	06.07.2016	03.08.2016	8.362	498.7	22.16

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T-2377

Job No.: CTCE/BBMP/W.No.08/HJSR/CSR-06/075j/CUBE/2016-17 03.08.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: **Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
* Name of the work	: Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
* Sample ID	: Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 03.08.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	06.07.2016	03.08.2016	8.275	479.2	21.30
2	06.07.2016	03.08.2016	8.319	489.5	21.76
3	06.07.2016	03.08.2016	8.454	502.4	22.33

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

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* Agency	: **Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
* Name of the work	: Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
* Sample ID	: Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 03.08.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	06.07.2016	03.08.2016	8.142	473.6	21.05
2	06.07.2016	03.08.2016	8.251	483.4	21.48
3	06.07.2016	03.08.2016	8.362	499.6	22.20

A E B

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T-2377

Job No.: CTCE/BBMP/W.No.08/HJSR/CSR-06/075j/CUBE/2016-17 15.08.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	: **Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
* Name of the work	: Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
* Sample ID	: Covering Slab Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 15.08.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	18.07.2016	15.08.2016	8.164	480.4	21.35
2	18.07.2016	15.08.2016	8.238	496.8	22.08
3	18.07.2016	15.08.2016	8.369	512.7	22.79

A&B

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Job No.: CTCE/BBMP/W.No.08/HJSR/WMM/Gradation/2016-17 14.07.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. H.J. Sanjay Reddy,**
4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.

Name of Work : Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016

Date of Testing : 14.07.2016

Material : WMM

Sample ID : WMM Layer Oven Dry Wt (gm): **7840**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	305	305	3.9	96.1	95-100
22.4	2455	2760	35.2	64.8	60-80
11.2	1350	4110	52.4	47.6	40-60
4.75	1210	5320	67.9	32.1	25-40
2.36	800	6120	78.1	21.9	15-30
0.600	710	6830	87.1	12.9	8-22
0.075	595	7425	94.7	5.3	0-8

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Job No.: CTCE/BBMP/W.No.08/HJSR/WMM/Gradation/2016-17 15.07.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. H.J. Sanjay Reddy,**
4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.

Name of Work : Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016

Date of Testing : 15.07.2016

Material : WMM

Sample ID : WMM Layer Oven Dry Wt (gm): **7990**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	285	285	3.6	96.4	95-100
22.4	2460	2745	34.4	65.6	60-80
11.2	1345	4090	51.2	48.8	40-60
4.75	1235	5325	66.6	33.4	25-40
2.36	895	6220	77.8	22.2	15-30
0.600	745	6965	87.2	12.8	8-22
0.075	610	7575	94.8	5.2	0-8

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Job No.: CTCE/BBMP/W.No.08/HJSR/WMM/Gradation/2016-17 16.07.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. H.J. Sanjay Reddy,**
4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.

Name of Work : Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016

Date of Testing : 16.07.2016

Material : WMM

Sample ID : WMM Layer

Oven Dry Wt (gm): **7815**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	290	290	3.7	96.3	95-100
22.4	2470	2760	35.3	64.7	60-80
11.2	1325	4085	52.3	47.7	40-60
4.75	1230	5315	68.0	32.0	25-40
2.36	815	6130	78.4	21.6	15-30
0.600	755	6885	88.1	11.9	8-22
0.075	560	7445	95.3	4.7	0-8

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Job No.: CTCE/BBMP/W.No.08/HJSR/WMM/AIV/2016-17 14.07.2016

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of the Work	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Sample ID	WMM Layer
Type of Mix	Wet Mix macadam
Date of Testing	14.07.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines	21.52	22.34	
	100* (W_2/W_1)%			**21.93**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.08/HJSR/WMM/S-T/2016-17 14.07.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of Work	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	14.07.2016

Result : Flakiness Index = **11.53%**

Elongation Index = **13.48%**

Result : Combined Flakiness & Elongation index **25.01%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of the Work	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.07.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	79	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	20.90	21.73	**21.31**

A&B

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/W.No.08/HJSR/SDBC/Shape_T/2016-17 21.07.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of Work	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.07.2016

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Result : Flakiness Index = **11.64%**

Elongation Index = **13.59%**

Result : Combined Flakiness & Elongation index **25.23%**

A.E.E

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.08/HJSR/SDBC/Stripping/2016-17 21.07.2016

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of the work	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.07.2016

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	2.8	2.93	97.07
2	2.9		
3	3.1		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.08/HJSR/SDBC/Sp_Wa/2016-17 21.07.2016

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
Name of the Work	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	21.07.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2014	2012	2013	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1259	1257	1258	
4	Weight of saturated surface dry aggregate in air	W_3 g	2009	2013	2016	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	750	756	758	
6	Weight of oven dried aggregate	W_4 g	1998	2001	2003	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.664	2.647	2.642	2.651
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.704	2.690	2.689	2.694
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.55%	0.60%	0.65%	0.60%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/W.No.08/HJSR/SDBC/Bitumen/2016-17 21.07.2016

BITUMEN CONTENT AND GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS : 2386 and IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
NAME OF THE WORK	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
SAMPLE I/D	Roads in Muneshwara Layout surroundings in Ward No. 08
DATE OF TESTING	21.07.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474.5	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25.5	25.50
7. Bitumen content in %	5.10	5.10
8. Average	**5.10**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	25.15	5.30	5.30	94.70	90-100
4.75	246.32	51.91	57.21	42.79	35-51
2.36	53.18	11.21	68.42	31.58	24-39
1.18	49.65	10.46	78.88	21.12	15-30
0.3	38.75	8.17	87.05	12.95	9-19
0.075	29.15	6.14	93.19	6.81	3-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	26.35	5.27	5.27	94.73	90-100
4.75	245.87	49.17	54.44	45.56	35-51
2.36	89.65	17.93	72.37	27.63	24-39
1.18	44.65	8.93	81.30	18.70	15-30
0.3	28.75	5.75	87.05	12.95	9-19
0.075	43.12	8.62	95.68	4.32	3-8

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Job No.: CTCE/BBMP/W.No.08/HJSR/SDBC/Bitumen/2016-17 22.07.2016

BITUMEN CONTENT AND GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS : 2386 and IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Mr. H.J. Sanjay Reddy,** # 4, 9th K Main, Hosahalli, Vijayanagara, Bangalore - 40.
NAME OF THE WORK	Improvements to roads and drains at Muneshwara Layout surroundings in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/EE/BTP/WO/334/2015-16 Dated: 24.03.2016
SAMPLE I/D	Roads in Muneshwara Layout surroundings in Ward No. 08
DATE OF TESTING	22.07.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26	25.50
7. Bitumen content in %	5.20	5.10
8. Average	**5.15**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	26.32	5.55	5.55	94.45	90-100
4.75	245.65	51.82	57.38	42.62	35-51
2.36	54.32	11.46	68.84	31.16	24-39
1.18	48.69	10.27	79.11	20.89	15-30
0.3	36.78	7.76	86.87	13.13	9-19
0.075	32.15	6.78	93.65	6.35	3-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	25.48	5.10	5.10	94.90	90-100
4.75	246.58	49.32	54.41	45.59	35-51
2.36	88.79	17.76	72.17	27.83	24-39
1.18	45.36	9.07	81.24	18.76	15-30
0.3	27.24	5.45	86.69	13.31	9-19
0.075	45.13	9.03	95.72	4.28	3-8

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